

In the Hawaiian area Honolulu continued to experience prevailing east winds, though the maximum velocity was 30 miles from the southwest. This was on the 8th during what the observer termed an "unseasonable kona," which brought excessive precipitation for a short time and broke a seven-months' drouth. The total June rainfall was 1.98 inches, which is 1.06 inches above the normal. The kona was due to a depression which appeared over the islands on the 5th. The low moved northward and slightly westward, affecting Honolulu most on the 8th. On the 11th it had traveled northwestward to a point near 50° N. and the 180th meridian, where it shortly disappeared without the usual eastward inclination of such cyclones.

During a considerable part of the month Lows lay over Mongolia and eastern China. One of these appeared over the Yangtze Valley on the 9th. It moved into the Eastern Sea on the 11th, and by the afternoon of the 12th, when it was central between Taiwan and southern Japan, had acquired considerable intensity. Late on the 12th and early on the 13th the American steamer *China Arrow* was experiencing gales of force 10 from NNE. to NE., in 28° 24' N., 128° E., with barometer down to 29.47 inches. During the 13th the storm crossed the Nansei Archipelago and late on that date and during the 14th and early 15th vessels off the lower and eastern Japanese coasts were experiencing northerly to northeasterly winds of force 10 and 11, with squalls of hurricane force. Among these vessels were the American steamers *President Lincoln* and *West Chopaka*. The cyclone closely

touched the eastern extremities of Hondo and Yezo, the latter on the afternoon of the 15th and, thence moving northeastward, seems shortly to have died out east or southeast of Kamchatka.

In the American Tropics the rainy season was well established at sea early in the month, especially off the Central American coast. One cyclone developed in this area. Our only information thus far received concerning it is from the Italian steamer *Duchessa d'Aosta*, which was southward bound at the time of the blow. Late on the 13th, while west of the southern part of the Gulf of Tehuantepec, this vessel ran into a moderate gale from ESE., with falling barometer. Before midnight the gale had changed to NE. by N., and increased to force 10, with pressure at 29.55 inches. At 5.30 a. m. of the 14th the barometer had risen only 0.03 inch from the lowest reading, with the wind at WSW., 7, and decreasing, in 15° N., 95° 50' W.

NOTES

South Pacific Cyclone.—According to press reports the harbor of Valparaiso, Chile, was swept by a hurricane on June 10, and much damage was done to shipping.

Indian monsoon.—The British steamer *Eurylochus*, while crossing the north Indian Ocean between Penang and Aden, experienced the southwest monsoon from June 7 to 20. On the 17th to 19th, while between 8° N., 55° E., and Cape Guardafui, the vessel reported a strong monsoon, often reaching force 8, but with "barometer following usual range."—W. E. H.

551.506 (73) DETAILS OF THE WEATHER IN THE UNITED STATES

GENERAL CONDITIONS

The outstanding feature of the month was its resemblance to one of the colder months of the year rather than to a normal June month; cyclonic systems developed rather more than the usual intensity and there were a large number of days when low pressure in the southeastern States, in conjunction with higher pressure to the northward, caused north to east winds and much cloudiness over the northeastern States, the Lake region and Ohio Valley, where the month was unusually cool. In the far west it was exceptionally warm, due to clear skies and abundant sunshine. Precipitation, as a rule, was deficient, although some rather small areas received more than the normal amount. The usual details follow.—A. J. H.

CYCLONES AND ANTICYCLONES

By W. P. DAY

Twelve Lows were plotted, which were important enough to be identified at three successive observations, and a few of these reached moderate intensity, especially along the northern border and in southern Canada. However, there were an unusual number of slight barometric depressions of local and temporary character especially over the Southern States, which could not be easily traced from the succeeding observations.

The 9 HIGHS were mostly of the Alberta type, the pressure being considerably above the normal at Fort Simpson on the Mackenzie River during most of the month; but the HIGHS pushing southward from the latter region were only of slight or moderate magnitude.

FREE AIR SUMMARY

By L. T. SAMUELS

Free-air temperatures averaged mostly below normal, with the negative departures increasing with altitude at several of the stations. (See Table 1.)

Relative humidities averaged close to normal, while the vapor-pressure departures were mostly negative at all aerological stations.

In Table 2 it may be seen that the resultant winds were close to their normal values at all stations except Ellendale, where a pronounced northerly component prevailed as compared to the normal southerly. At this station it will be observed, the negative temperature departures increase most appreciably with altitude.

The resultant winds for the month as shown by pilot-balloon observations indicated, at the 1,000 m. level, a marked southerly component over Florida, Texas, and Oklahoma, and an equally marked northerly component over North Dakota. At the other stations east of the Mississippi River the predominant resultant direction at this level was practically west. At 5,000 m. the resultant winds were northwest over all stations west of the Atlantic coast States. In the latter they were mostly west, while over southern Florida they were southwest.

Deep easterly winds were observed on the last three days of the month to heights of 10 km. at Broken Arrow, Groesbeck, Memphis and Due West. These stations were at the time situated in the southern quadrant of a ridge of high pressure extending in an E-W direction. At Washington, D. C., on these days a light northwesterly wind extending to 8 km. was surmounted by a gale reaching 34 m. p. s. from the west-southwest. The line

dividing these two currents was exceedingly sharply defined.

The 8 a. m. and 3 p. m. pilot-balloon observations at Washington, D. C. on the 14th afford an excellent example of the diurnal variation in wind velocity with height. At these times an area of low pressure was approaching this station from the west, but only the winds below 2,200 m. showed any change during this interval. The well-known diurnal increase in wind velocity at the surface and adjacent levels and the decrease above are particularly well shown and are given in the following table:

| Altitude (m.) m. s. l. | Wind velocity m. p. s. | |
|------------------------|---------------------------|---------|
| | 8 a. m. | 3 p. m. |
| Surface..... | 1 | 4 |
| 250..... | 2 | 8 |
| 500..... | 1 | 7 |
| 750..... | 3 | 2 |
| 1,000..... | 5 | 1 |
| 1,500..... | 8 | 2 |
| 2,000..... | 9 | 5 |
| 2,500..... | 10 | 10 |

Another illustration of a well-marked diurnal effect is shown in the Due West kite records of the 23d and 26th. The usual diurnal increase in the temperature lapse-rate throughout the first several hundred meters of the air column is particularly well brought out in these records. It will be noted in the following table that the nocturnal inversion resulting from radiation was entirely eliminated during the kite flight by the effects of insolation and by the time of the descent had been replaced by a super-adiabatic temperature gradient. On both of these dates this station was under the influence of low pressure and thundershowers occurred the ensuing night.

| Twenty-third | | | | Twenty-sixth | | | |
|--------------|-----------------------|---------------|----------------------|--------------|-----------------------|---------------|----------------------|
| Time | Alt. (m.) m. s. l. | Temp. ° C. | Δt 100 m. | Time | Alt. (m.) m. s. l. | Temp. ° C. | Δt 100 m. |
| A. M. | | | | A. M. | | | |
| 8.13..... | 217 | 21.9 | ..... | 8.18..... | 217 | 24.3 | ..... |
| 8.14..... | 379 | 19.6 | 1.42 | 8.19..... | 394 | 22.5 | 1.02 |
| 8.19..... | 601 | 21.4 | -0.81 | 8.24..... | 606 | 24.4 | -0.90 |
| 8.30..... | 1,192 | 17.0 | 0.74 | 8.42..... | 1,183 | 19.7 | 0.81 |
| 8.51..... | 1,966 | 11.4 | 0.72 | 9.08..... | 1,950 | 12.2 | 0.98 |
| 9.22..... | 3,057 | 5.5 | 0.54 | 9.31..... | 2,295 | 11.0 | 0.35 |
| 10.16..... | 3,573 | 1.8 | 0.72 | 9.36..... | 2,880 | 6.9 | 0.70 |
| 10.21..... | 3,891 | 0.8 | 0.46 | 9.57..... | 3,052 | 5.7 | 0.70 |
| 10.29..... | 2,982 | 6.3 | 0.63 | 10.20..... | 4,087 | -0.1 | 0.56 |
| 11.02..... | 1,816 | 13.6 | 0.65 | 10.41..... | 4,798 | -3.7 | 0.54 |
| 11.15..... | 890 | 19.6 | 1.22 | 11.02..... | 3,716 | 2.4 | 0.59 |
| 11.23..... | 217 | 27.8 | ..... | 11.14..... | 2,817 | 7.7 | 0.69 |
| | | | | 11.25..... | 1,933 | 13.8 | 1.05 |
| | | | | 11.30..... | 1,762 | 15.6 | 0.90 |
| | | | | 11.46..... | 1,082 | 21.7 | 1.01 |
| | | | | 11.57..... | 566 | 26.9 | 1.23 |
| | | | | P. M. | | | |
| | | | | 12.02..... | 217 | 31.2 | ..... |

The official in charge of Due West, in referring to an instance wherein the kite wire became greatly tangled about one of the splice wires, used for attaching secondary kites, emphasizes the strongly stratified condition of the atmosphere sometimes found. He says:

The conditions leading to these tangles may be of interest. They always happen when the atmosphere is strongly stratified; a stratum of moderate velocity near the surface above which an almost calm layer exists while farther aloft is an abrupt transition to a swiftly moving layer. Usually this condition evolves during the kite flight for it is impossible to raise the kites through the calm layer, as this is generally of a direction opposite or normal to the lower direction. In reeling in, the kites come down one by one through the swiftly moving layer, suddenly plunge when they reach the calm layer and in most cases do a great deal of diving, upside down and rear end foremost, and at this time it is believed the turns and tangles are thrown in the wire. Flights in east winds which clockwise turn to SW. or W. aloft are bad about tangling wires and ropes and untwisting splice wires.

TABLE 1.—Free-air temperatures, relative humidities, and vapor pressures during June, 1926

| TEMPERATURE (° C.) | | | | | | | | | | | |
|-----------------------------------|-------------------------------------|---|--------------------------------|---|---------------------------------------|---|------------------------------------|---|------------------------------------|---|---|
| Altitude, m. s. l. (meters) | Broken Arrow, Okla. (233 meters) | | Due West S. C. (217 meters) | | Ellendale, N. Dak. (441 meters) | | Groesbeck, Tex. (141 meters) | | Royal Center, Ind. (225 meters) | | * Wash- ington, D. C. (7 meters) |
| | Mean | De- part- ure from normal 8-year mean | Mean | De- part- ure from normal 6-year mean | Mean | De- part- ure from normal 9-year mean | Mean | De- part- ure from normal 8-year mean | Mean | De- part- ure from normal 8-year mean | Mean |
| Surface..... | 23.9 | -1.3 | 26.4 | -0.4 | 17.8 | -1.3 | 26.1 | 0.0 | 20.0 | -2.9 | 20.3 |
| 250..... | 23.8 | -1.3 | 25.9 | -0.5 | 17.3 | -1.5 | 25.1 | 0.0 | 19.7 | -2.9 | 19.2 |
| 500..... | 22.4 | -0.8 | 23.3 | -0.4 | 17.3 | -1.5 | 23.4 | +0.3 | 17.0 | -2.9 | 18.7 |
| 750..... | 21.4 | -0.2 | 21.6 | -0.3 | 15.4 | -1.8 | 21.6 | 0.0 | 15.4 | -2.6 | 17.3 |
| 1,000..... | 20.1 | -0.2 | 19.8 | -0.5 | 13.7 | -2.1 | 20.4 | 0.0 | 14.1 | -2.3 | 16.1 |
| 1,250..... | 19.0 | 0.0 | 17.3 | -1.2 | 12.2 | -2.3 | 19.4 | +0.2 | 12.7 | -2.1 | 14.7 |
| 1,500..... | 17.6 | 0.0 | 15.5 | -1.2 | 10.7 | -2.5 | 18.6 | +0.6 | 11.2 | -2.2 | 13.4 |
| 2,000..... | 15.0 | +0.2 | 12.0 | -1.3 | 7.7 | -2.7 | 16.5 | +0.8 | 8.5 | -2.2 | 10.5 |
| 2,500..... | 12.0 | +0.1 | 9.1 | -1.0 | 4.7 | -2.9 | 13.2 | +0.1 | 6.0 | -1.9 | 7.7 |
| 3,000..... | 8.9 | +0.1 | 5.7 | -1.3 | 1.6 | -3.2 | 9.9 | -0.6 | 3.2 | -1.9 | 4.5 |
| 3,500..... | 5.9 | +0.2 | 2.1 | -1.7 | -1.4 | -3.3 | 6.2 | -1.6 | 0.4 | -2.0 | 1.0 |
| 4,000..... | 2.4 | -0.1 | -0.7 | -1.7 | -4.5 | -3.6 | ..... | ..... | -2.1 | -2.1 | -2.2 |
| 4,500..... | -0.8 | -0.3 | -3.4 | -2.0 | -8.0 | -3.9 | ..... | ..... | -4.6 | -2.0 | ..... |
| 5,000..... | -4.5 | -1.0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

| RELATIVE HUMIDITY (%) | | | | | | | | | | | |
|-----------------------|----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Surface..... | 70 | -1 | 58 | -3 | 56 | -13 | 74 | +1 | 62 | -2 | 73 |
| 250..... | 70 | -1 | 58 | -3 | 56 | -13 | 75 | +1 | 62 | -2 | 72 |
| 500..... | 67 | -4 | 62 | -1 | 56 | -12 | 75 | -1 | 63 | -2 | 64 |
| 750..... | 64 | -7 | 65 | +1 | 58 | -8 | 77 | +2 | 63 | -3 | 67 |
| 1,000..... | 64 | -6 | 67 | +2 | 59 | -7 | 72 | +1 | 64 | -3 | 66 |
| 1,250..... | 62 | -7 | 68 | +2 | 59 | -6 | 65 | -2 | 64 | -4 | 65 |
| 1,500..... | 62 | -5 | 69 | +2 | 59 | -4 | 58 | -5 | 62 | -5 | 66 |
| 2,000..... | 57 | -5 | 68 | 0 | 59 | -2 | 49 | -6 | 55 | -8 | 70 |
| 2,500..... | 51 | -5 | 65 | -2 | 59 | 0 | 55 | +4 | 53 | -2 | 67 |
| 3,000..... | 49 | -4 | 65 | 0 | 57 | +2 | 54 | +7 | 47 | -4 | 68 |
| 3,500..... | 48 | -4 | 69 | +5 | 54 | +3 | 62 | +17 | 41 | -3 | 68 |
| 4,000..... | 49 | -2 | 73 | +10 | 50 | +3 | ..... | ..... | 39 | +4 | 60 |
| 4,500..... | 55 | +6 | 74 | +20 | 48 | +2 | ..... | ..... | 37 | +3 | ..... |
| 5,000..... | 68 | +17 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

| VAPOR PRESSURE (mb.) | | | | | | | | | | | |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Surface..... | 20.83 | -1.85 | 19.04 | -1.92 | 11.02 | -4.55 | 24.66 | +0.19 | 14.41 | -3.47 | 17.64 |
| 250..... | 20.65 | -1.83 | 18.84 | -1.78 | ..... | ..... | 23.70 | +0.11 | 14.18 | -3.41 | 16.23 |
| 500..... | 18.29 | -1.85 | 17.41 | -0.98 | 10.74 | -4.35 | 21.42 | -0.15 | 12.33 | -2.93 | 13.99 |
| 750..... | 16.40 | -1.77 | 16.47 | -0.37 | 9.68 | -3.55 | 19.68 | +0.15 | 11.16 | -2.75 | 13.23 |
| 1,000..... | 15.21 | -1.31 | 15.51 | -0.02 | 8.98 | -2.96 | 17.26 | +0.16 | 10.40 | -2.43 | 12.13 |
| 1,250..... | 13.75 | -1.02 | 12.19 | -2.10 | 8.20 | -2.58 | 14.66 | -0.33 | 9.60 | -2.19 | 10.97 |
| 1,500..... | 12.47 | -0.65 | 10.90 | -2.10 | 7.45 | -2.14 | 12.41 | -0.63 | 8.78 | -1.81 | 10.22 |
| 2,000..... | 9.41 | -0.66 | 8.15 | -2.49 | 6.20 | -1.57 | 9.17 | -0.72 | 6.30 | -1.87 | 8.79 |
| 2,500..... | 6.69 | -0.70 | 5.98 | -2.43 | 5.42 | -0.94 | 8.63 | +0.69 | 4.78 | -0.89 | 6.83 |
| 3,000..... | 5.16 | -0.40 | 4.47 | -2.12 | 4.38 | -0.54 | 7.41 | +1.02 | 3.54 | -0.57 | 5.54 |
| 3,500..... | 3.98 | -0.42 | 3.37 | -1.77 | 3.35 | -0.56 | 7.05 | +1.80 | 2.48 | -0.16 | 4.37 |
| 4,000..... | 3.23 | -0.28 | 2.62 | -1.09 | 2.49 | -0.69 | ..... | ..... | 2.26 | +0.84 | 3.37 |
| 4,500..... | 2.87 | 0.00 | 1.16 | -1.43 | 1.75 | -0.70 | ..... | ..... | 2.04 | +1.09 | ..... |
| 5,000..... | 2.28 | +0.05 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

* Naval Air Station.

TABLE 2.—Free-air resultant winds (m. p. s.) during June, 1926

| Altitude, m. s. l. (Meters) | Broken Arrow, Okla. (233 meters) | | | | Due West, S. C. (217 meters) | | | | Ellendale, N. Dak. (444 meters) | | | | Groesbeck, Tex. (141 meters) | | | | Royal Center, Ind. (225 meters) | | | | Washington, D. C. (34 meters) | |
|---------------------------------------|-------------------------------------|------|-----------------------|------|---------------------------------|------|-----------------------|------|------------------------------------|-------|-----------------------|-------|---------------------------------|-------|-----------------------|-------|------------------------------------|------|-----------------------|------|-------------------------------------|-------|
| | Mean | | Normal 8-year mean | | Mean | | Normal 6-year mean | | Mean | | Normal 9-year mean | | Mean | | Normal 8-year mean | | Mean | | Normal 8-year mean | | Mean | |
| | Dir. | Vel. | Dir. | Vel. | Dir. | Vel. | Dir. | Vel. | Dir. | Vel. | Dir. | Vel. | Dir. | Vel. | Dir. | Vel. | Dir. | Vel. | Dir. | Vel. | Dir. | Vel. |
| Surface..... | S. 31° W. | 1.5 | S. 6° W. | 4.1 | S. 75° W. | 2.8 | S. 73° W. | 1.4 | N. 50° W. | 2.4 | N. 63° W. | 0.2 | S. 16° W. | 4.1 | S. 3° E. | 3.4 | S. 76° W. | 3.4 | S. 60° W. | 1.6 | W. | 0.4 |
| 250..... | S. 30° W. | 1.6 | S. 5° W. | 4.2 | S. 76° W. | 3.0 | S. 74° W. | 1.5 | ..... | ..... | ..... | ..... | S. 17° W. | 5.0 | S. 3° E. | 4.1 | S. 73° W. | 3.8 | S. 54° W. | 1.7 | N. 79° W. | 1.5 |
| 500..... | S. 14° W. | 3.3 | S. 10° W. | 5.5 | S. 80° W. | 3.9 | S. 79° W. | 2.2 | N. 57° W. | 2.4 | N. 71° W. | 0.3 | S. 18° W. | 6.2 | S. 3° W. | 5.4 | S. 77° W. | 6.2 | S. 57° W. | 3.0 | N. 82° W. | 2.7 |
| 750..... | S. 14° W. | 3.4 | S. 14° W. | 6.1 | S. 82° W. | 4.5 | S. 75° W. | 2.8 | N. 58° W. | 2.5 | S. 33° W. | 0.7 | S. 19° W. | 6.5 | S. 6° W. | 5.8 | S. 79° W. | 7.4 | S. 60° W. | 4.1 | N. 34° W. | 6.7 |
| 1,000..... | S. 57° W. | 5.4 | S. 24° W. | 6.3 | S. 84° W. | 5.6 | S. 80° W. | 2.9 | N. 63° W. | 3.1 | S. 45° W. | 1.3 | S. 26° W. | 6.2 | S. 9° W. | 6.2 | S. 85° W. | 8.0 | S. 70° W. | 4.8 | N. 77° W. | 4.8 |
| 1,250..... | S. 41° W. | 3.2 | S. 27° W. | 6.3 | S. 83° W. | 6.5 | S. 82° W. | 3.6 | N. 67° W. | 3.6 | S. 62° W. | 1.9 | S. 23° W. | 5.4 | S. 10° W. | 6.4 | N. 88° W. | 9.5 | S. 77° W. | 5.5 | ..... | ..... |
| 1,500..... | S. 55° W. | 3.3 | S. 32° W. | 6.4 | S. 83° W. | 7.4 | S. 84° W. | 4.5 | N. 60° W. | 4.8 | S. 68° W. | 2.4 | S. 32° W. | 4.9 | S. 12° W. | 5.9 | N. 83° W. | 9.6 | S. 85° W. | 5.5 | N. 67° W. | 7.5 |
| 2,000..... | S. 66° W. | 5.3 | S. 38° W. | 6.6 | S. 81° W. | 7.9 | S. 86° W. | 6.2 | N. 57° W. | 6.5 | S. 76° W. | 3.6 | S. 27° W. | 3.6 | S. 12° W. | 5.5 | N. 74° W. | 12.1 | S. 88° W. | 8.0 | N. 81° W. | 8.6 |
| 2,500..... | S. 68° W. | 5.5 | S. 40° W. | 6.7 | S. 81° W. | 7.9 | S. 84° W. | 6.6 | N. 61° W. | 8.4 | S. 85° W. | 5.5 | S. 8° E. | 3.0 | S. 12° W. | 5.3 | N. 70° W. | 15.1 | S. 85° W. | 9.5 | N. 89° W. | 10.6 |
| 3,000..... | S. 67° W. | 7.6 | S. 41° W. | 6.5 | S. 82° W. | 9.8 | S. 86° W. | 8.4 | N. 59° W. | 10.9 | S. 85° W. | 7.5 | S. 24° E. | 4.6 | S. 14° W. | 5.4 | N. 64° W. | 15.5 | S. 89° W. | 10.8 | S. 86° W. | 11.1 |
| 3,500..... | S. 68° W. | 8.8 | S. 48° W. | 6.9 | W. | 12.0 | S. 84° W. | 9.7 | N. 58° W. | 13.4 | S. 87° W. | 9.4 | S. 26° E. | 5.6 | S. 6° W. | 5.6 | N. 59° W. | 12.2 | S. 89° W. | 10.8 | N. 85° W. | 10.2 |
| 4,000..... | S. 73° W. | 10.0 | S. 63° W. | 7.4 | W. | 9.3 | S. 84° W. | 9.5 | N. 69° W. | 13.5 | S. 89° W. | 11.7 | ..... | ..... | ..... | ..... | N. 53° W. | 14.4 | N. 82° W. | 13.0 | N. 84° W. | 11.1 |
| 4,500..... | S. 89° W. | 10.6 | S. 88° W. | 8.4 | W. | 13.0 | N. 70° W. | 13.1 | N. 61° W. | 18.0 | N. 85° W. | 13.4 | ..... | ..... | ..... | ..... | N. 68° W. | 18.0 | N. 86° W. | 9.5 | W. | 10.4 |
| 5,000..... | S. 45° W. | 10.0 | N. 83° W. | 11.2 | W. | 14.0 | N. 70° W. | 10.7 | N. 45° W. | 13.0 | N. 70° W. | 14.2 | ..... | ..... | ..... | ..... | N. 68° W. | 18.0 | N. 42° W. | 19.4 | N. 88° W. | 10.0 |

THE WEATHER ELEMENTS

By P. C. DAY, In Charge of Division

PRESSURE AND WINDS

On the whole June, 1926, was without marked features and over much of the thickly populated portions of the Middle and Eastern States it was pleasantly cool during the greater part, though mainly not sufficiently so to seriously interfere with seasonal crop development.

Like most of the months since the beginning of the year the weather continued warmer than normal in the more western districts and distinctly cool in the eastern and southern portions.

The pressure distribution was not abnormal and cyclones were confined mainly to the northern districts east of the Rocky Mountains, generally passing over the Great Lakes, where several developed into storms of considerable importance.

No cyclones of importance entered the United States from the far Northwest, though two or more appear to have had their origin during the second decade in British Columbia, and maintained their identity as moderate depressions moving eastward across the country by way of the Great Lakes and into the St. Lawrence Valley. There were only slight evidences of cyclonic activity in the Gulf and South Atlantic States.

There was little storm activity in the central Plains and to the eastward save about the 12th to 15th when a moderate cyclone moved from the middle Rocky Mountains eastward to New England and the Middle Atlantic States, attended by the most important and extensive precipitation of the month. Rains occurred in portions of the Great Plains, and there were moderate to heavy falls in the central valleys and over most eastern districts. Important precipitation also occurred on the 5th and 6th over the Gulf States and along the Atlantic coast to southern New England and on the 16th and 17th when some heavy local falls occurred in the lower Missouri and upper Mississippi Valleys and in southern Florida. Rather general rains occurred over the Gulf and South Atlantic States on the 20th and 21st, and precipitation was rather general over the northern States east of the Rocky Mountains on the 21st and 22d, and again over the Gulf and Atlantic Coast States on the 23d and 24th, and on the 27th and 28th, though there was little evidence of cyclonic action on any of these dates.

Anticyclones of importance were notably infrequent and they exerted no important influence on the weather of the month save on the 16th and 17th when high pressure caused sharp temperature falls in the Atlantic Coast States, and similar conditions existed on the 20th and 21st, and high pressure caused a rather important lowering of the temperature over the central valleys and generally to the eastward on the 26th and 27th.

Pressure averaged somewhat higher than normal for June over the western half of both the United States and Canada and lower over the eastern half of both countries, though the changes from normal were not unusually large. Compared with the pressure for the preceding month, it was higher from the western Canadian Provinces southeastward to Texas, and over the middle Mississippi and Ohio Valleys and the Atlantic Coast States. It was lower than in May west of the Rocky Mountains, save for a small area in the far Northwest, it was lower, also, in portions of the middle Gulf States and from the Great Lakes to the Canadian Maritime Provinces.

Moderately high pressure over the Southeastern States during much of the month favored southerly winds in the Mississippi Valley, Great Plains and Gulf States, and southwest to west winds from the upper Mississippi Valley eastward. Over other parts of the country winds were greatly diversified, though there was a general tendency toward a cyclonic circulation around the Great Basin.

Local wind, hail or other damaging storms were reported on most days of the month, but were confined largely to the area between the Great Plains and Appalachian Mountains. An unusually severe thunderstorm with heavy lightning damage occurred at San Francisco, Calif., on the 7th. In the main, however, damages from such storms were moderate and but few lives were lost.

The details concerning the more important storms of the month appear as usual at the end of this section.

TEMPERATURE

As has been the case for a number of months past, the average temperatures were above normal over the western half and below over the eastern, the center of most pronounced heat covering the Plateau and Pacific Coast States, where the average departures ranged from 4° to 9°, and the means at a number of points in the area were among the highest of record for June. On the other